

Fused Chloride of Lead Conducts

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it protected the platina from contact with the melted part long after that contact was expected.

128. This insulating power of ice is not effective with electricity of exalted intensity. On touching a diverged gold-leaf electrometer with a wire connected with the platina, whilst the tin case was touched by the hand or another wire, the electrometer was instantly discharged (155).

129. But though electricity of an intensity so low that it cannot diverge the electrometer, can still pass (though in very limited quantities (155)) through ice; the comparative relation of water and ice to the electricity of the voltaic apparatus is not less extraordinary on that account, or less important in its consequences.

130. As it did not seem likely that this *law of the assumption of conducting power during liquefaction, and loss of it during congelation*, would be peculiar to water, I immediately proceeded to ascertain its influence in other cases, and found it to be very general. For this purpose bodies were chosen which were solid at common temperatures, but readily fusible; and of such composition as, for other reasons connected with electro-chemical action, led to the conclusion that they would be able when fused to replace water as conductors. A voltaic battery of two troughs, or twenty pairs of four-inch plates (120), was used as the source of electricity, and a galvanometer introduced into the circuit to indicate the presence or absence of a current.

131. On fusing a little chloride of lead by a spirit-lamp on a fragment of a Florence flask, and introducing two platina wires connected with the poles of the battery, there was instantly powerful action, the galvanometer was most violently affected, and the chloride rapidly decomposed. On removing the lamp, the instant the chloride solidified all current and consequent effects ceased, though the platina wires remained inclosed in the chloride not more than the one-sixteenth of an inch from each other. On renewing the heat, as soon as the fusion had proceeded far enough to allow liquid matter to connect the poles, the electrical current instantly passed.

131. On fusing the chloride, with one wire introduced, and then touching the liquid with the other, the latter being cold,

caused a little knob to concrete on its extremity, and no current passed; it was only when the wire became so hot as to be able to admit or allow of contact with the liquid matter, that conduction took place, and then it was very powerful.

132. When chloride of silver and chlorate of potassa were